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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,935	12/30/2003	Aaron T. Deever	87209RLW	1924

7590  
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05/04/2007

EXAMINER
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KOZIOL, STEPHEN R

ART UNIT	PAPER NUMBER
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2609

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/748,935

Applicant(s)

DEEVER, AARON T.

Examiner

Stephen R. Koziol

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**Detailed Action**

***Formalities***

1. The abstract of the disclosure is objected to because of the redundant "from" on line 7. Please delete the unnecessary "from". See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1,3, 9-10, 16-17, and 19-22 rejected under 35 U.S.C. 102(e) as being anticipated by Joshi et al. US Patent 6,668,090 B1..

Regarding Claim 1, Joshi discloses a method for encoding digital image data, said method comprising the steps of:

1. defining a base image type and a plurality of higher level image types of said digital image data, each said image type having a preassigned one of a plurality of quantization step-size sets (fig. 1 and 2);
2. transforming the digital image data using a subband decomposition to produce a plurality of subbands, each said subband having a plurality of subband coefficients (fig1, also, col. 2 ln. 40-44);

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3. quantizing said subband coefficients of each said subband according to said quantization step-size set of said base image type to provide quantized coefficients(fig 2/item206, also, fig 3/item301, also, col.2 ln. 44-47);
4. partitioning each said subband into a plurality of codeblocks; assigning each said codeblocks one of said image types and a corresponding quantization step-size set to provide respective assigned step-size sets(fig 2, also, col. 5 ln. 22-55);
5. forming one or more bitplanes from said quantized coefficients of each said codeblock of each said subband(fig 2, also, col.2 ln. 47-52); and
6. discarding at least part of one of said bitplanes having a discard parameter in a predetermined range, said discard parameter being a function of the assigned step-size set of the respective said codeblock (fig 2, also, col. 6 ln. 18-41).

Regarding Claim 3, Joshi discloses encoding the quantized coefficients of each codeblock (fig 3/items 301 thru 303, also, col. 5 ln. 55-67).

Regarding Claim 9, Joshi discloses encoding said quantized coefficients of each of said codeblocks in a plurality of coding passes, each said coding pass generating a partial-bitplane, said partial-bitplanes of each said codeblock together defining a respective bitplane; and said discarding further comprises discarding at least one partial-bitplane (fig. 2, also, col. 6 ln. 18-42).

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Regarding Claim 10, Joshi discloses the encoding of said quantized coefficients of each of said codeblocks in a plurality of coding passes further comprises entropy encoding (fig 3/item303).

Claims 16 and 17 have been analyzed and are rejected for the reasons outlined in response to claim 1 above because the core limitations claims 16 and 17 recite are nearly identical in scope to those found in claim 1, despite those limitations taking different embodiments.

Regarding Claim 19, Joshi discloses an image encoder with a discard unit that tells the encoder which bitplanes to discard, causing the encoder to discard those bitplanes from further encoding (fig. 2/items 206 thru 215, also, col. 6 ln. 18-42).

Regarding Claim 20, Joshi discloses an encoder further comprising a bit-stream organizer for combining partial-bitplanes into a bit-stream (fig. 2/item 215, also, col. 5 ln. 42-48).

Regarding Claim 21, Joshi discloses an encoder further capable of forming said partial-bitplanes from said quantized coefficients of each said codeblock of each said subband and encoding all of said coefficients; and said discard unit communicates said discardable partial-bitplanes to said bit-stream organizer, which excludes said discardable partial-bitplanes from said bit-stream (fig. 2, also, col 5 ln. 12-55).

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Regarding Claim 22, Joshi discloses the image encoder is an entropy encoder (fig 3 /item303).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: **(See MPEP Ch. 2141)**

- a. Determining the scope and contents of the prior art;
- b. Ascertaining the differences between the prior art and the claims in issue;
- c. Resolving the level of ordinary skill in the pertinent art; and
- d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

5. Claims 2, 4-8, 11-15, 18, and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi et al. US Patent 6,668,090 B1.

Regarding claim 2, Joshi fails to disclose the base image type is preassigned the smallest quantization step-size. However, Official Notice is taken that both the concept and advantage of defining a base image and assigning the base image the smallest quantization step size are notoriously well known and expected in the art, and therefore would have been obvious to incorporate in the image encoding method for defining the smallest quantization step-size set.

See In re Litner, 173 USPQ 560 (CCPA 1972) -- "Claims which are broad enough to read on obvious subject matter are unpatentable even though they also read on nonobvious subject matter."

Regarding claim 4-5, Joshi is silent on whether the discarding of bitplanes is prior to or after encoding the image. However, Official Notice is taken that both the concept and advantage of discarding bitplanes within a predetermined discard range either before or after the encoding of an image are notoriously well known and expected in the art, and therefore would have been obvious to incorporate in the image encoding method for reducing superfluous image data.

Regarding claim 6-8, Joshi fails to disclose the image encoding method further comprising

1. associating an image type with each image coordinate contributing to each codeblock
2. discard parameters that are a function of said image types
3. mapping said coordinated into a plurality of influence regions
4. subband coefficients defining resultant pixels,

however, Official Notice is taken that it would have been obvious to one of ordinary skill in the art at the time of the invention of to employ the above steps 1-4 as claimed in

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claims 6-8 for codeblock compression and subband coefficient formation for the benefit of discarding unnecessary bitplanes.

Regarding claim 11 and 23, Joshi fails to disclose using an arithmetic binary encoder to perform binary arithmetic encoding. However, Official Notice is taken that both the concept and advantage of binary arithmetic encoding are notoriously well known and expected in the art, and therefore would have been obvious to incorporate in the image encoding method for bitstream generation.

Regarding claim 12-13, Joshi fails to disclose the assigned quantizer step-size is based on image type and labeled  $\Delta_{I,j}$  and that the base type quantizer step-size is also based on image type and labeled  $\Delta_{B,j}$  and that the number of bitplanes to discard is a logarithmic ratio of the two aforementioned quantizer step-sizes given by:  $\log_2(\Delta_{I,j} / \Delta_{B,j})$ . However Official Notice is taken that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Joshi's disclosed quantizer step-sizes and bitplane discard size to take the form of  $\Delta_{I,j}$ ,  $\Delta_{B,j}$  and  $\log_2(\Delta_{I,j} / \Delta_{B,j})$  respectively for the benefit of defining quantizer step-sizes and bitplane discard sizes.

Regarding claim 14-15, Joshi fails to disclose modifying and shrinking subband coefficients prior to quantization. However, Official Notice is taken that both the concept



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and advantage of including modifying and shrinking subband coefficients prior to quantization during the process of image encoding are notoriously well known and expected in the art, and therefore would have been obvious to incorporate for the benefit of streamlining the quantization process during encoding.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 6,252,994 B1 Nafarieh. Pixel blocks of an input image are type classified based on an analysis of pixel values for each respective pixel block. A discrete cosine transform (DCT) is performed on the pixel values of each pixel block, and a quantization modification process thresholds and/or quantizes the resulting DCT coefficients based on the type classification of the respective pixel block. Once the coefficients are modified in this way and encoded, the resulting data can be decoded and dequantized in compliance with the standard JPEG sequential mode data syntax in order to construct a perceptually faithful representation of the image, without passing any additional information to the decoder concerning the quantization modification.
- US 6,853,318 B1 Rabbani et al. A method for producing a compressed digital image from an input digital image is disclosed, wherein the compressed digital

image is organized into layers corresponding to increasing visual quality levels. The input digital image is decomposed to produce a plurality of subbands, each subband having a plurality of subband coefficients. The plurality of subband coefficients of each subband of the decomposed input digital image are quantized to produce a quantized output value for each subband coefficient of each subband. At least one bit-plane is formed from the quantized output values of the subband coefficients of each subband. Each bit-plane of each subband in at least one pass is entropy encoded to produce a compressed bit-stream corresponding to each pass, wherein each subband is entropy encoded independently of the other subbands. A visual significance value is computed for each pass, and a visual quality table is provided that specifies a number of expected visual quality levels and corresponding visual significance values. For each expected visual quality level, a minimal set of passes and their compressed bit-streams that are necessary to achieve the corresponding visual significance value are identified. The compressed bit-streams corresponding to passes are then ordered into layers from the lowest expected visual quality level to the highest expected visual quality level specified in the visual quality table to produce a compressed digital image, wherein each layer includes the passes and their corresponding compressed bit-streams from the identified minimal set corresponding to the expected visual quality level that have not been included in any lower visual quality layers.

***Examiner's Note***

7. The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

**Contact**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Koziol whose telephone number is (571) 270-1884. The examiner can normally be reached on M - alt. F 8:00-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571) 272-7332. Customer Service can be reached at (571) 272-2600. The fax number for the organization where this application or proceeding is assigned is (571) 273-7332.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER**